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[54] METHOD AND SYSTEM FOR ON DEMAND DOWNLOADING OF MODULE TO ENABLE REMOTE CONTROL OF AN APPLICATION PROGRAM OVER A NETWORK

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[56] References Cited

U.S. PATENT DOCUMENTS

5 280 583 1/1994 Nakayama et al.

5,280,583	1/1994	Nakayama et al.	395/200.35
5,315,711	5/1994	Barone et al.	395/200.38
5,347,632	9/1994	Filipep et al.	395/200.2
5,379,374	1/1995	Ishizaki et al.	395/200.33
5,392,400	2/1995	Berkowitz et al.	395/200.33
5,491,791	2/1995	Glowey et al.	395/181.33
5,530,795	6/1996	Wan	395/200.35
5,537,548	7/1996	Fin et al.	395/682

#### OTHER PUBLICATIONS

X Over the Web, Daniel Dandailler, *The X Resource*, Issue 15.

Levitt, Jason "Building apps with Navigator," *Information Week*, Nov. 6 1995, n552 p88(4): CD. Computer Selection 1995.

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[57] — 58 ABSTRACT

The system and method is disclosed for remotely controlling an application program over a network. The system includes an application interception module and remote display module. The remote display module is transported across the network and executed on the user system in response to a user's request to provide on-demand remote control of an application program. The application interception module captures an I/O stream generated by an application program, converts it to remote control protocol messages and transports them across a network to the remote display module executing in the user system. The remote display module converts the remote control protocol messages to system calls compatible with the operating system environment for the user's computer. Likewise, the remote display module converts system calls to the local resource interface in the user's computer to remote control protocol messages which are transported across the network to the application interception module. The application interception module intercepts the remote control protocol messages to system calls for the application program. In this manner, output from the application program is provided to the user's computer and input actions at the user's computer are provided to the application program. Preferably, the remote display modules and application programs are presented through HTTP servers over a network to a user's system which uses a browser having a JAVA interpreter to execute the remote display module and convert the remote control protocol messages. *Ex*

18 Claims, 4 Drawing Sheets

